

1-15. (CANCELED)

16. (CURRENTLY AMENDED) A composite sheet material comprising:

a ~~lightweight~~ rigid core (34) of honeycomb cellular material having a first and a second side and an initial thickness, ~~and the lightweight rigid core being formed by a plurality of adjacent parallel extruded tubes; and the rigid core (34) being formed of a plurality of individually extruded tubes arranged adjacently and in parallel and in a hexagonal pattern to form a honeycomb structure in which each tube has a first end in contact with a first side skin and a second end in contact with a second side skin; and~~

[[a]] the first skin is formed of continuous sheet material on the first side of the rigid core and [[a]] the second skin is formed of continuous sheet material on the second side of side of the rigid core, with and the first and the second skins each having have an initial thickness; and

~~the lightweight rigid core (34) and the first and the second skins (32, 36) are formed of a reinforced thermoplastic materials laminate thermoformable in a temperature range of 150°C to 300°C; and~~

the tubes are formed of polyetherimide material thermoformable in a temperature range up to 170°C; and

a panel formed of the lightweight rigid core (34) and the first and the second skins (32,36) is being simultaneously uniformly compressed while heated to a temperature in a thermoformable range of 150°C to 170°C to have a thickness less than a sum of [[an]] the initial thicknesses of the lightweight rigid core (34), the first side skin (32) and the second side skin (36) while at a temperature higher than the softening temperature of the lightweight rigid core (34); and the first side and the second side of the lightweight rigid core (34) of honeycomb cellular material being distorted; whereby

in each tube, regions of a wall of the tube adjacent only the first and second ends of the tube are distorted symmetrically about a longitudinal axis of the tube by an amount to bridge interstices between the first ends and the second ends of each of adjacent ones of the tubes to thereby increase the contact surface area between the tube and the first side and the second side skins and walls.

17. (CURRENTLY AMENDED) The composite sheet material according to claim 16, wherein the first and the second skins (32, 36) are secured to the lightweight

rigid core (34) using a separate polyester base thermoplastic adhesive which has a fusion temperature of less than 150°C.

18-19. (CANCELED)

20. (CURRENTLY AMENDED) The composite sheet material according to claim [[19]] 16, wherein the extruded tubes have circular cross-section.

21. (CURRENTLY AMENDED) ~~[[The]]~~ A composite sheet material comprising:  
a ~~lightweight~~ rigid core (12, 34) of honeycomb cellular material having an initial thickness and being formed by a plurality of ~~adjacent parallel extruded tubes~~ individually extruded tubes arranged adjacently and in parallel and in a hexagonal pattern to form a honeycomb; and

a first skin of continuous sheet material on a first side of the ~~lightweight~~ rigid core (12, 34) ~~of honeycomb cellular material~~ and a second skin of continuous sheet material on a second side of the ~~lightweight~~ rigid core (34) ~~of honeycomb cellular material~~, and the first skin (14, 32) and the second skin (16, 36) each ~~having~~ have an initial thickness;

wherein each tube has a first end in contact with a first side skin and a second end in contact with a second side skin;

the tubes are formed of polyetherimide material thermoformable in a temperature range up to 170°C;

~~the lightweight rigid core (12, 34) of honeycomb cellular material~~ and the first and the second skins (14, 16; 32, 36) are formed of a reinforced thermoplastic materials laminate thermoformable in a temperature range of 150°C to 300°C; and

the first and the second skins (14, 16; 32, 36) are each attached to a corresponding side of the ~~lightweight~~ rigid core (12, 34) ~~of honeycomb cellular material~~ by a polyester base thermoplastic adhesive having a fusion temperature less than ~~a fusion temperature of the lightweight rigid core (12, 34) and the first and the second skins (14, 16; 32, 36)~~ 150°C; and

~~the first side and the second side of the lightweight rigid core (12, 34) of honeycomb cellular material being deformed~~

a panel formed of the rigid core, the first and the second skins is uniformly compressed, while heated to a temperature in a thermoformable range of 150°C to 170°C, to have a thickness less than a sum of the initial thicknesses of the rigid core and the first and second skins so that

in each tube, regions of a wall of the tube adjacent only the first and second ends of the tube are distorted symmetrically about a longitudinal axis of the tube by an amount to bridge interstices between the first ends and the second ends of each of adjacent ones of the tubes to thereby increase the contact surface area between the tube and the first side and second side skins and walls.

22. (CANCELED)

23. (CURRENTLY AMENDED) The composite sheet material according to claim 16, wherein the ~~lightweight~~ rigid core (12, 34) has a lower fusion temperature than a fusion temperature of the first skin (14, 16) and ~~a fusion temperature~~ of the second skin (32, 36).

24-25. (CANCELED)

26. (CURRENTLY AMENDED) A composite sheet material comprising:

a ~~lightweight~~ rigid core (34) of honeycomb cellular material having a first side and a second side and an initial thickness, ~~the lightweight rigid core (34) of honeycomb cellular material comprising a plurality of adjacent tubes and formed of a plurality of individually extruded tubes arranged adjacently and in parallel and in a hexagonal pattern to form a honeycomb with each tube extending from a first end at the first side to a second end at the second side; and~~

a first skin of continuous sheet material on the first side and a second skin of continuous sheet material on the second side of side, with the first and the second skins each having an initial thickness;

wherein the tubes are formed of polyetherimide material thermoformable in a temperature range of 150°C to 170°C; and

the first and the second skins are formed of a reinforced thermoplastic laminate thermoformable in a temperature range of approximately 170° to 300°C; and

~~the lightweight rigid core (34) of honeycomb cellular material and the first and the second skins (32, 36) are formed of thermoplastic materials;~~

~~the composite sheet material being uniformly compressed to a thickness less than a sum of an initial thicknesses of the lightweight rigid core (34) of honeycomb cellular material, the first skin (32) and the second skin (36) while at a temperature higher than the softening temperature of the lightweight rigid core (34), and opposed ends of the plurality of tubes on the first side and the second side of the lightweight rigid core (34) of honeycomb cellular material being distorted upon uniform compression of the composite sheet material, such that the distorted opposed ends of the tubes on the first side and the second side of the core provide an increased surface area for contact with the first skin and the second skin~~

in each tube, regions of a wall of the tube adjacent only the first and second ends of the tube are distorted symmetrically about a longitudinal axis of the tube by an amount to bridge interstices between the first ends and the second ends of each of adjacent ones of the tubes to thereby increase the contact surface area between the tube and the first side and second side skins and walls.